

# PATENT ABSTRACTS OF JAPAN

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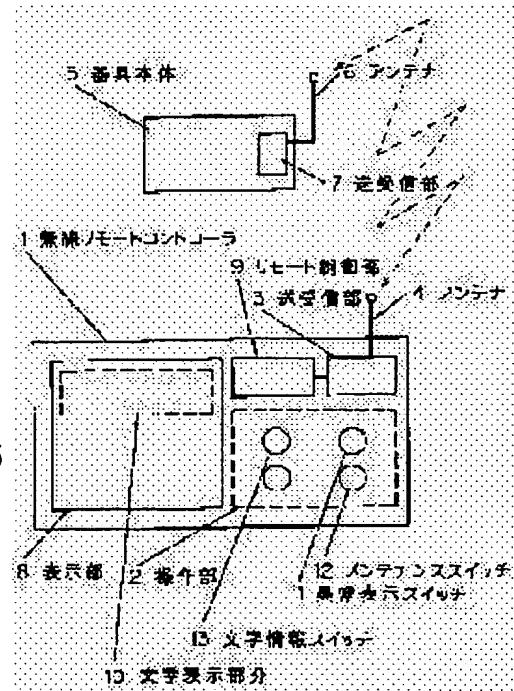
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## (54) REMOTE CONTROL SYSTEM

### (57) Abstract:

**PROBLEM TO BE SOLVED:** To enable a user to execute a correct emergency measure or the like and also to enable a repairman to execute repair even when a manual is not at hand, by a method wherein the content of abnormality in an equipment main body and means for repairing it are displayed in a character display part in the case when the abnormality occurs in the equipment main body.

**SOLUTION:** At the time when an equipment main body 5 stops operating due to some failure, e.g. in the case when a burner incorporated in a gas water heater fails to ignite, a control part of the equipment main body 5 detects non-ignition and transmits non-ignition data to a transmission-reception part 7 of the equipment main body 5 and the non-ignition data are transmitted thereby to a remote control part 9 through an antenna 6 of the equipment main body 5, an antenna 4 of a radio remote controller 1 and a transmission-reception part 3 of the radio remote controller 1. Receiving the non-ignition data, the remote control part 9 displays prescribed character information in a character display part 10 of a display part 8. For instance, the content of abnormality is displayed in such a statement as 'burner fails to ignite'.



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## CLAIMS

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## [Claim(s)]

[Claim 1] The remote control section which consists of the body of an instrument equipped with the transceiver section, said body of an instrument, and a remote controller equipped with the transceiver section transmitted and received, and controls the body of an instrument to said remote controller, The control unit which inputs a control signal into said remote control section, and the display which displays the condition of the body of an instrument are provided. Said display is a remote-control system characterized by displaying the content of abnormalities and its repair means of the body of an instrument described above into said character representation part when it has the character representation part which carries out character representation and abnormalities occur on said body of an instrument.

[Claim 2] The remote-control system according to claim 1 characterized by displaying the information on the content of abnormalities of the past of the body of an instrument on a display in written form when a control unit is operated.

[Claim 3] The remote-control system according to claim 1 or 2 characterized by displaying the information on the operating condition of the body of an instrument operated by remote control by operating a control unit on a display in written form.

[Claim 4] The remote-control system indicated to claim 1 characterized by displaying two or more sorts of selectable text on a display by operating a control unit thru/or either of 3.

[Claim 5] The remote-control system according to claim 1 to 4 which performs data communication between the body of an instrument, and a remote controller by radiocommunication.

[Claim 6] The body of an instrument equipped with the transceiver section connected with the antenna which communicates with a remote controller, The remote control section which consists of a remote controller equipped with the transceiver section connected to the antenna which communicates with the body of an instrument, and communicates with the transceiver section to said remote controller, The control unit which operates a remote control section, and the display which has a character representation part are provided. The remote-control system which formed the text switch for displaying the repair switch for displaying the abnormality display switch for displaying the abnormalities of the body of an instrument at a character representation part, and the repair means of the body of an instrument, and two or more sorts of selectable text on said control unit.

[Claim 7] The body of an instrument is the remote-control system according to claim 1 to 6 used as the gas facility device containing a gas water heater or a gas security machine.

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## DETAILED DESCRIPTION

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[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the remote-control system of the instrument operated by the electronics control containing home gas facility devices, such as a gas water heater and a gas security machine.

[0002]

[Description of the Prior Art] In the case of the conventional remote-control system, the content of a display of the display of a controller was mainly performed by burning and putting out lights of a specific character, and the abnormality display of failure etc. was performed numerically.

[0003]

[Problem(s) to be Solved by the Invention] However, with the above-mentioned conventional configuration, when trouble indication was performed by digital display, he was hardly understood, and unless the repair person in charge also had the manual, it was unutilizable, and the user had further the technical problem that trouble indication could not be checked, adjusting the body of an instrument.

[0004]

[Means for Solving the Problem] The body of an instrument with which this invention was equipped with the transceiver section in order to solve the above-mentioned technical problem, The remote control section which consists of said body of an instrument, and a remote controller equipped with the transceiver section transmitted and received, and controls the body of an instrument to said remote controller, The control unit which inputs a control signal into said remote control section, and the display which displays the condition of the body of an instrument are provided. Said display is taken as the remote-control system which displays the content of abnormalities and its repair means of the body of an instrument described above into said character representation part, when it has the character representation part which carries out character representation and abnormalities occur on said body of an instrument.

[0005] Therefore, if it is easy treatment, the user itself can cope with the abnormalities of the body of an instrument, and for a repair person in charge, even if there is no manual, repair of abnormalities, such as failure, can be performed.

[0006]

[Embodiment of the Invention] The body of an instrument with which invention concerning the claim 1 publication of this invention was equipped with the transceiver section, The remote control section which consists of said body of an instrument, and a remote controller equipped with the transceiver section transmitted and received, and controls the body of an instrument to said remote controller, The control unit which inputs a control signal into said remote control section, and the display which displays the condition of the body of an instrument are provided. Said display displays the content of abnormalities and its repair means of the body of an instrument described above into said character representation part, when it has the character representation part which carries out character representation and abnormalities occur on said body of an instrument.

[0007] Therefore, the exact repair request and exact first-aid treatment of the user of the body of an instrument become possible, and even if a repair person in charge does not have a service manual etc., he can fix according to the troubleshooting procedure displayed on the remote controller.

[0008] Moreover, invention concerning claim 2 publication displays the information on the content of abnormalities of the past of the body of an instrument on a display in written form, when a control unit is operated, and a repair person in charge and a maintenance person in charge can hold exactly the information on the proper of the body of an instrument, and become possible [ performing more certain and speedy repair and a maintenance ].

[0009] Moreover, invention concerning claim 3 publication displays the information on the operating condition of the body of an instrument operated by remote control on a display in written form by operating a control unit.

[0010] Therefore, at the time of a maintenance, the need for the need for the fixed exchange for every components, decomposition repair, or adjustment can be known promptly, and an exact and quick maintenance is attained.

[0011] Moreover, invention concerning claim 4 publication displays two or more sorts of selectable text on a display by operating a control unit.

[0012] Therefore, offer of a remote controller with more high convenience is attained by choosing and carrying out character representation of the text, such as news, to arbitration.

[0013] Moreover, when invention concerning claim 5 publication performs data communication between the body of an instrument, and a remote controller by radiocommunication and repair, a maintenance, and first-aid treatment are performed, it can go to a required location with a remote controller, and text can be acquired in a required location. Moreover, text, such as news, can also be acquired in the location of arbitration.

[0014] Moreover, the body of an instrument equipped with the transceiver section connected with the antenna with which invention concerning claim 6 publication communicates with a remote controller, The remote control section which consists of a remote controller equipped with the transceiver section connected to the antenna which communicates with the body of an instrument, and communicates with the transceiver section to said remote controller, The control unit which operates a remote control section, and the display which has a character representation part are provided. The text switch for displaying the repair switch for displaying the abnormality display switch for displaying the abnormalities of the body of an instrument and the repair means of the body of an instrument and two or more sorts of selectable text on a character representation part is formed in said control unit.

[0015] According to this invention, it is what showed the configuration which can attain concretely all operations indicated, respectively, and is easy to carry out operation of this invention to claim 1 described above thru/or 5.

[0016] Moreover, invention concerning claim 7 publication can use the body of an instrument as the gas facility device containing the gas security machine called a gas water heater or an intelligent meter, and the use of a gas facility device can be raised to a gas facility device especially with the application of this invention.

[0017] The example of the remote-control system of this invention is explained below, referring to a drawing.

[0018] Drawing 1 is the system chart of the wireless remote-control system for the gas water heaters as one example of this invention.

[0019] As shown in drawing 1, the remote-control system of this invention The body 5 of an instrument is controlled for the content of actuation of the control unit 2 of the wireless remote controller 1 through the transceiver section 3 of the wireless remote controller 1, the antenna 4 of the wireless remote controller 1, the antenna 6 of the body 5 of an instrument, and the transceiver section 7 of the body 5 of an instrument. Moreover, the situation of the body 5 of an instrument of operation etc. It displays on a display 8 through the transceiver section 7 of the body 5 of an instrument, the antenna 6 of the body 5 of an instrument, the antenna 4 of the wireless remote controller 1, and the transceiver section 3 of the wireless remote controller 1.

[0020] Although one wireless remote controller 1 was indicated in order to give explanation easy here, of course, even two or more sets are possible.

[0021] In addition to this, the body 5 of an instrument consists of water heater component parts (the graphic display has not been carried out), such as body of instrument 5 control section, with the transceiver section 7 of the body 5 of an instrument, and the antenna 6 of the body 5 of an instrument.

[0022] Moreover, the wireless remote controller 1 consists of the body 5 of an instrument, the transceiver section 3 of the wireless remote controller 1 which performs transmission and reception of a radio signal, the antenna 4 of the wireless remote controller 1, a control unit 2 that receives actuation of the wireless remote controller 1, a display 8 which displays the condition of the wireless remote controller 1 and the body 5 of an instrument, and a remote control section 9 which controls the whole remote control.

[0023] It is also possible for the character representation part 10 to be arranged at a part of display 8, to display various text, and to make all of displays 8 into the character representation area 10.

[0024] Moreover, the abnormality display switches 11, such as failure, the maintenance switch 12, and text switch 13 grade other than the switch for the basic operation of remote control are arranged at the control unit 2.

[0025] Next, the actuation in the above-mentioned configuration is explained. When the burner built in the gas water heater is not lit when the body 5 of an instrument stops having operated by a certain failure for example The control section of the body of an instrument detects miscarriage fire, transmits miscarriage fire data to the transceiver section 7 of the body 5 of an instrument, and transmits the miscarriage fire data to the remote control section 9 through the antenna 6 of the body 5 of an instrument, the antenna 4 of the wireless remote controller 1, and the transceiver section 3 of the wireless remote controller 1.

[0026] The remote control section 9 will display the defined text on the character representation part 10 of a display 8, if miscarriage fire data are received. The content of a display did not light for example, "burner. the content display of abnormalities "-- good -- it carried out and "burner was not lit. Please once shut a hot-water-supply plug and open it again. The operating instructions "may be directed.

[0027] Moreover, "burner was not lit. Please check that the gas main cock is open. The approach of the treatment "can also be displayed and it is a "1; gas main cock check further. 2; fan motor actuation check. 3; gas solenoid-valve actuation check. 4; igniter actuation check. .... The display of things like a repair manual, such as ", is also possible.

[0028] Although here showed the example as which the remote control section 9 generates and displays the content of character representation based on the abnormality data from the body 5 of an instrument, it is able for the body 5 of an instrument to determine the content of character representation, and to transmit and carry out character representation to the wireless remote controller 1 by using the content as data.

[0029] At the time of failure correction, if the abnormality display switch 11 is pushed, the past failure situation and past repair history which have been memorized in the memory built in the remote control section 9 are displayed on the character representation part 10 of a display 8 as text, and can utilize as pinpointing of a failure part, or a rule of thumb of a parts replacement.

[0030] The past hysteresis is memorized as long as memory is allowed, and Lycium chinense is also possible for it. Moreover, when the body control section of an instrument of the body 5 of an instrument memorizes the past hysteresis and the abnormality display switch 11 is pushed, it is possible to transmit data to the wireless remote controller 1, and to also make it display on the character representation part 10 of a display 8 from the body 5 of an instrument.

[0031] Since there are many use counts and times compared with ordinary homes, in the case of a business-use gas water heater etc., components, such as a heat exchanger, may need fixed exchange, and it may maintain them periodically in them.

[0032] When the maintenance switch 12 is pushed at the time of the maintenance, the time and use count for every element components of an instrument are based on the data transmitted from the body of an instrument, and they are "heat exchanger; 500 hours, and 750 times. Water flow control valve; 280

hours, 1200 times. .... Like ", it is displayed on the character representation part 10 of a display 8.

[0033] Moreover, when a parts replacement is carried out and it is necessary to set up gas pressure and the engine speed of a fan motor, an adjustment value and adjustment data can also be displayed.

[0034] Furthermore, if the text switch 13 is pushed, text, such as news which wireless remote controller 1 self received, can be displayed on the character representation part 10 of a display 8 at any time.

[0035] The body 5 of an instrument may receive and text, such as these news, may be transmitted to the wireless remote controller 1 by radiocommunication.

[0036] Although the example in the abnormality display switch 11 and the switch which gave the specific function like the maintenance switch 12 was shown, the switch which the user of general usually does not use can also make this example substitute for the function in the hiding mode by the general multiplex push of a switch, and the pattern of switch actuation.

[0037] According to this example, the required information which can be understood to anyone can be acquired by hand actuation as mentioned above in a required location by displaying abnormality information, such as failure, maintenance information, news, etc. on the display of a wireless remote controller in written form.

[0038]

[Effect of the Invention] The exact first-aid treatment by the user of invention concerning claim 1 publication etc. becomes possible by displaying the failure information, the repair approach, and the first-aid treatment approach of the body of an instrument in written form, and even if a repair person in charge does not have a service manual etc., he can fix according to the troubleshooting procedure displayed on the remote controller, so that clearly from the above explanation.

[0039] Moreover, in invention concerning claim 2 publication, by displaying a past failure situation and a past repair history in written form, a repair person in charge and a maintenance person in charge can hold the information on the instrument proper exactly, and can perform more certain and speedy repair and a maintenance.

[0040] By displaying the information on the operating condition of the body of an instrument in written form, at the time of a maintenance, it becomes possible to get to know promptly the need for the need for the fixed exchange for every components, decomposition repair, or adjustment, and an exact and quick maintenance can be performed in invention which furthermore relates to claim 3 publication.

[0041] And in invention concerning claim 4 publication, offer of high remote control of convenience can be performed more for a user by choosing and carrying out character representation of the text, such as news, to arbitration.

[0042] Moreover, in invention concerning claim 5 publication, when performing repair, a maintenance, and first-aid treatment by carrying out and making cordless the communication link between a remote controller and the body of an instrument to radiocommunication, a remote controller can be moved to a required location, and text can be acquired in a required location, and text, such as news, can also be acquired in the location of arbitration.

[0043] Moreover, in invention which relates to seven publications at claim 6 list, invention of each of said claim is concretely realizable.

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**TECHNICAL FIELD**

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**[Field of the Invention]** This invention relates to the remote-control system of the instrument operated by the electronics control containing home gas facility devices, such as a gas water heater and a gas security machine.

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**PRIOR ART**

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**EFFECT OF THE INVENTION**

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**TECHNICAL PROBLEM**

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## MEANS

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[Means for Solving the Problem] The body of an instrument with which this invention was equipped with the transceiver section in order to solve the above-mentioned technical problem, The remote control section which consists of said body of an instrument, and a remote controller equipped with the transceiver section transmitted and received, and controls the body of an instrument to said remote controller, The control unit which inputs a control signal into said remote control section, and the display which displays the condition of the body of an instrument are provided. Said display is taken as the remote-control system which displays the content of abnormalities and its repair means of the body of an instrument described above into said character representation part, when it has the character representation part which carries out character representation and abnormalities occur on said body of an instrument.

[0005] Therefore, if it is easy treatment, the user itself can cope with the abnormalities of the body of an instrument, and for a repair person in charge, even if there is no manual, repair of abnormalities, such as failure, can be performed.

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[0009] Moreover, invention concerning claim 3 publication displays the information on the operating condition of the body of an instrument operated by remote control on a display in written form by operating a control unit.

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[0032] When the maintenance switch 12 is pushed at the time of the maintenance, the time and use count for every element components of an instrument are based on the data transmitted from the body of an instrument, and they are "heat exchanger; 500 hours, and 750 times. Water flow control valve; 280 hours, 1200 times. .... Like ", it is displayed on the character representation part 10 of a display 8.

[0033] Moreover, when a parts replacement is carried out and it is necessary to set up gas pressure and the engine speed of a fan motor, an adjustment value and adjustment data can also be displayed.

[0034] Furthermore, if the text switch 13 is pushed, text, such as news which wireless remote controller 1 self received, can be displayed on the character representation part 10 of a display 8 at any time.

[0035] The body 5 of an instrument may receive and text, such as these news, may be transmitted to the wireless remote controller 1 by radiocommunication.

[0036] Although the example in the abnormality display switch 11 and the switch which gave the specific function like the maintenance switch 12 was shown, the switch which the user of general usually does not use can also make this example substitute for the function in the hiding mode by the general multiplex push of a switch, and the pattern of switch actuation.

[0037] According to this example, the required information which can be understood to anyone can be acquired by hand actuation as mentioned above in a required location by displaying abnormality information, such as failure, maintenance information, news, etc. on the display of a wireless remote controller in written form.

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## DESCRIPTION OF DRAWINGS

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[Brief Description of the Drawings]

[Drawing 1] The explanatory view of the wireless remote-control system of the water heater by this invention

[Description of Notations]

- 1 Wireless Remote Controller
- 2 Control Unit
- 3 Seven Transceiver section
- 4 Six Antenna
- 8 Display
- 9 Remote Control Section
- 10 Character Representation Part
- 11 Abnormality Display Switch
- 12 Maintenance Switch
- 13 Text Switch

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[Translation done.]

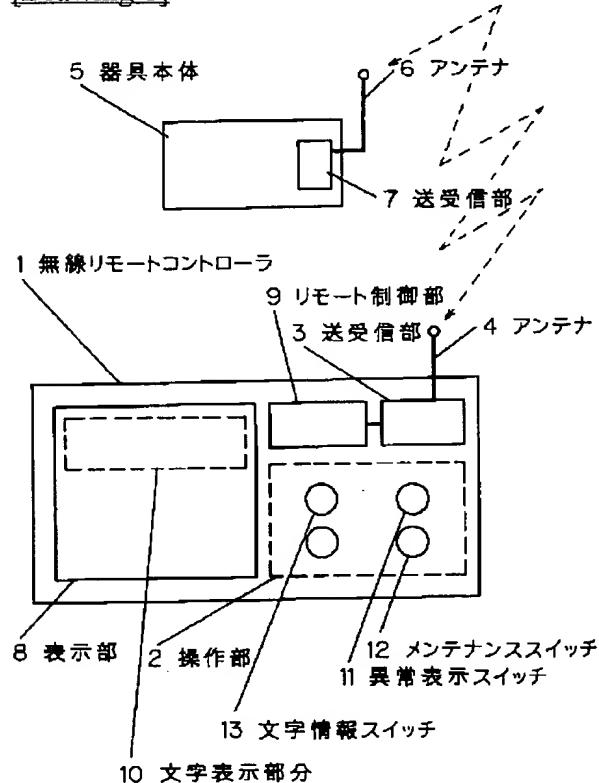
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1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. \*\*\*\* shows the word which can not be translated.
3. In the drawings, any words are not translated.

## DRAWINGS

## [Drawing 1]



[Translation done.]